

Amendments to the drawings:

The attached sheet of drawings shows changes to Figure 4. This sheet, which includes Figures 3-5, replaces the original sheet, including Figures 3-5. In Figure 4, numbers 49, previously omitted, have been added. It is believed that no new matter is introduced thereby because the numbers are clearly indicated in the specification and would be evident from context.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

REMARKS

Claim Objections

The claims have been amended as noted by the Examiner to correct the noted antecedent basis problems.

In claim 13, "the beam" has been replaced with --power transfer structure--.

In claim 18 the article "a" replaces the article --the-- in front of "substrate".

In claims 21 and 30 and elsewhere, the term "source" has been corrected to be --source generator-- as noted by the Examiner.

In claim 34, the terms "the force generator" and "force generator" have been changed to --mass--, believed to better represent one embodiment of the invention.

The objections to claims 35, 43-44, 48, and 51-52 are obviated by the cancellation of claims 35-36, and 43-55.

The Examiner has also objected to claims 26 and 27 as reciting power producing elements which find no antecedent basis in claim 22. Applicant is unable to immediately identify the problem with these claim and notes that the power producing elements are new elements introduced in claims 26 and 27 that do not require antecedent basis in claim 22.

Claim rejections 35 U.S.C. §112

Claims 4-6, 10-12, 24, 29, 27-39, and 44 through 47 have been rejected as failing to comply with the written description requirement. Specifically the Examiner is concerned that the specification does not disclose: (1) how the magnetic field is disposed about the conducting loops, (2) the source of the magnetic field, (3) how the field is controlled, and (4) if/how two magnetic fields at the ends of the beams are isolated from each other.

The Applicant has reviewed the disclosure and believes the description of the generation of electrical power using conductors in a magnetic field would be adequate to one of ordinary skill in the art of electrical generators. It is known that any conductor moving across a magnetic field to cut the lines of magnetic flux will experience an induced voltage that will cause a current flow in the conductor when the conductor is connected in a circuit. Thus, with respect to concern (1) above, a person of ordinary skill in the art would know that an appropriate arrangement of the magnetic field to the conducting loops would be for the lines of flux of the

magnetic field to cross the conductor. This arrangement is, in fact, depicted clearly in Figure 1 using a standard notation showing the direction of magnetic flux lines by a circle having an "x" in it (showing the tail of an arrow headed into the paper).

With respect to concern (2), the specification notes that the source of the field is a magnet, for example, at paragraph [0035].

With respect to concern (3) the specification does not describe how the field is controlled because the magnetic field in the preferred embodiment is not controlled but is a static magnetic field from a magnet.

With respect to concern (4), it is believed the source of confusion may be the two arrows seen in cross section in the figures and indicated by numeral 39 which are simply example flux lines of a unitary magnetic field. That is, there are not two magnetic fields as proposed by the Examiner but rather a single magnetic field having many flux lines, the latter of which are simply graphical indications of the strength and direction of the magnetic field having no physical reality.

Applicants do not disclose how a change in the magnetic field on one side of the beam due to varying currents passing through it, affect the magnetic field on the second side at the load, because the magnetic field generated by current flow through the beam itself is extremely minor and thus generally disregarded in the present invention.

Perhaps some of the confusion results from the fact that the same structure may be either a motor or a generator, thus reflecting the general fact that DC motors may be used as generators and generators may operate as motors under certain circumstances. Thus, the citation by the Examiner of page 7, lines 14-16, corresponding roughly to paragraph [0032], describes a generator while the Examiner's citation of page 15, lines 10-12, corresponding roughly to paragraph [0057], describes the same structure used as a motor.

In this latter case, a current, in this case, an AC current, is applied to the loop conductor in a magnetic field. A current passing through a conductor that is in a magnetic field produces a force on the conductor that tends to move the conductor perpendicularly to its length and to the magnetic field according to the right-hand rule. Again, Applicant does not dwell on this because it would be understood to those of ordinary skill in the art to whom this invention is directed.

The undersigned has reviewed the disclosure and believes it is enabling to those in this art, but would be happy to discuss details of the specification with the Examiner in an interview.

Claim Rejections 35 U.S.C. § 102

Claims 1-3, 22-23, 34-36, 48-49 and 52 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Mihailovich.

Mihailovich is assigned to the Rockwell Science Center, an organization affiliated with the assignee of the present invention. For this reason, Mihailovich describes similar technology and, in particular, describes the insulated beam that forms part of a preferred embodiment of the present invention. Further, as noted by the Examiner, Mihailovich teaches a source generator, for example, in Fig. 2, in which a signal is produced by generator circuit 32, drives an electrostatic motor formed by capacitor C_d . The operation of this circuit is to move a beam (mass 26--shown as 24) and to cause movement of the plates of a capacitor C_c . The beam roughly corresponds to the power transfer structure of the present invention.

Nevertheless, missing in Mihailovich is an electrical generator per independent claim 1 generating electrical power that is delivered to a load. The detector circuit of Mihailovich detects changes in the capacitance C_c but there is no indication that it generates power. In fact, it is likely that power is applied to the detector circuit of Mihailovich for the purpose of measuring the capacitance C_c .

A person of ordinary skill in the art in reviewing the Mihailovich reference would believe that no power was generated by the Mihailovich device and Mihailovich does not teach otherwise. Accordingly, it is believed that the above-claims are not anticipated by Mihailovich.

Claims 1-4, 7, 10, 20-25 and 28-30, 34-37, 40, 43-44, 51 and 53 have also been rejected under 35 U.S.C. § 102(b) as being anticipated by Herbert, a patent assigned to the same assignee of the present invention.

Unlike Mihailovich, Herbert teaches that movement of the beam structure can be sensed using a piezo-electric sensor which is a form of electrical generator. Accordingly, the independent claims 1, 22, and 32 have been amended.

Claim 1 has been amended to cover only magnet and loop type electrical generators. Herbert provides no teaching or suggestion of this form of electrical generator.

Claim 22 has been amended to require the powering of a load with the electrical power distinguishing from Herbert in which any electrical signal is used only for sensing purposes. In this context, Applicant adopts the standard meaning of powering a load, that is, of providing substantially all the power needed for the load's operation.

Claim 32 has been amended to cover a generator using vibration to create power for an integrated circuit, such as is not taught or suggested by Herbert and which finds disclosure at paragraph [0004]-[00005] of the present application. New claims 56 and 57 also provide this limitation.

More generally, Herbert like Mihailovich teaches a sensing system, not a generator as required by the present claims. Applicant notes that the claims requires an "electrical generator" not simply an "output electrical signal". A switch may produce an output electrical signal but would never be considered an electrical generator. Thus, referring to Fig. 2, cited by the Examiner, item 24 is a variable capacitor structure that is used for sensing purposes and is not readily adapted to generate power, nor is such an use suggested by Herbert. The Examiner generally notes that in paragraph [0045], Herbert suggests that the sensor could include an "inductive sensor" however Applicant believes that there is no basis for the inference that an inductive sensor would be an electrical generator. More likely it would be part of a tuned circuit receiving an external source of electrical power.

Because Herbert is directed solely toward sensing systems, it is believed that there is no teaching or suggestion for a modification of Herbert to create the power generation systems as now claimed.

In light of these remarks and comments it is believed that claims 1-3, 5, 6, 10-24, 26-34, 37-39, 56, and 57 are now in condition for allowance and allowance is respectfully requested.

Very truly yours,
ANTHONY GERARD GIBART, ET AL.

By: _____
Keith M. Baxter
Reg. No. 31,233
Attorney for Applicant
Boyle Fredrickson Newholm Stein & Gratz, S.C.
250 East Wisconsin Avenue, Suite 1030
Milwaukee, WI 53202

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Very truly yours,
RICHARD D. HARRIS ET AL.

By: 

Keith M. Baxter
Reg. No. 31,233
Attorney for Applicant
Boyle Fredrickson Newholm Stein & Gratz, S.C.
250 East Wisconsin Avenue, Suite 1030
Milwaukee, WI 53202

